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NATA

LumCAT: 2-2006-M
Luminaire: 92.70.131.00

Report No: NATA0100	Voltage(V): 34.7100
Test No: GC2019123020	Current(A): 0.6000
LampCAT: LUMINUS CXM-14-AC40	Power (W): 20.8600
Lamp flux(lm): 2608.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 0	Width(mm): 0
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 2276.42
Efficiency(%): 87.29%
Lumens(lm)/Power(W): 109.13
Central intensity(cd): 6889.782
Maximum intensity(cd): 6889.782
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=27.3
[C90/270]Total=27.3
Field angle(10%Imax): [C0/180]Total=66.8
[C90/270]Total=66.8
Maximum s/h(1/2): C0_180=0.46 C90_270=0.46
Maximum s/h(1/4): C0_180=0.45 C90_270=0.45
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 87.29%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.524%

Equipment: GMS1980	Date: 2019/12/30	Operator: NT07
Temperature(°C): 25.0	Humidity(%): 65.0%	Distance(m): 7.50

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	6889.781	0.000	0	.000%	.000%
1.0	6874.945	6.586	6.586	.253%	.289%
2.0	6818.555	19.654	26.24	.754%	1.153%
3.0	6734.391	32.414	58.655	1.243%	2.577%
4.0	6620.555	44.703	103.358	1.714%	4.540%
5.0	6445.195	56.208	159.566	2.155%	7.010%
6.0	6232.430	66.624	226.19	2.555%	9.936%
7.0	5999.625	75.924	302.114	2.911%	13.271%
8.0	5684.344	83.620	385.734	3.206%	16.945%
9.0	5354.648	89.465	475.199	3.430%	20.875%
10.0	4986.773	93.586	568.786	3.588%	24.986%
11.0	4565.320	95.445	664.231	3.660%	29.179%
12.0	4167.281	95.460	759.69	3.660%	33.372%
13.0	3726.422	93.678	853.369	3.592%	37.487%
14.0	3288.656	89.792	943.161	3.443%	41.432%
15.0	2915.789	85.177	1028.339	3.266%	45.173%
16.0	2573.367	80.431	1108.77	3.084%	48.707%
17.0	2218.148	74.617	1183.387	2.861%	51.984%
18.0	1947.305	68.679	1252.066	2.633%	55.001%
19.0	1733.133	64.032	1316.098	2.455%	57.814%
20.0	1505.827	59.282	1375.38	2.273%	60.418%
21.0	1363.001	55.087	1430.467	2.112%	62.838%
22.0	1242.619	52.361	1482.828	2.008%	65.138%
23.0	1127.679	49.735	1532.564	1.907%	67.323%
24.0	1054.357	47.707	1580.271	1.829%	69.419%
25.0	996.905	46.641	1626.912	1.788%	71.468%
26.0	949.043	45.934	1672.846	1.761%	73.486%
27.0	912.277	45.538	1718.384	1.746%	75.486%
28.0	881.845	45.423	1763.807	1.742%	77.481%
29.0	857.018	45.494	1809.301	1.744%	79.480%
30.0	832.184	45.608	1854.909	1.749%	81.483%
31.0	803.046	45.506	1900.415	1.745%	83.482%
32.0	762.180	44.842	1945.257	1.719%	85.452%
33.0	710.831	43.395	1988.652	1.664%	87.359%
34.0	653.513	41.289	2029.942	1.583%	89.172%
35.0	576.858	38.211	2068.152	1.465%	90.851%
36.0	498.263	34.232	2102.384	1.313%	92.355%
37.0	423.380	30.059	2132.443	1.153%	93.675%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	343.491	25.597	2158.04	.981%	94.800%
39.0	259.777	20.591	2178.631	.790%	95.704%
40.0	190.216	15.694	2194.326	.602%	96.394%
41.0	134.093	11.549	2205.874	.443%	96.901%
42.0	82.048	7.853	2213.727	.301%	97.246%
43.0	51.855	4.960	2218.687	.190%	97.464%
44.0	33.061	3.205	2221.892	.123%	97.604%
45.0	23.252	2.164	2224.056	.083%	97.700%
46.0	19.744	1.681	2225.738	.064%	97.773%
47.0	17.698	1.489	2227.227	.057%	97.839%
48.0	16.207	1.371	2228.597	.053%	97.899%
49.0	15.286	1.293	2229.891	.050%	97.956%
50.0	14.541	1.244	2231.134	.048%	98.010%
51.0	14.140	1.213	2232.348	.047%	98.064%
52.0	13.830	1.200	2233.548	.046%	98.117%
53.0	13.507	1.189	2234.737	.046%	98.169%
54.0	13.219	1.178	2235.915	.045%	98.220%
55.0	12.966	1.169	2237.084	.045%	98.272%
56.0	12.734	1.161	2238.245	.045%	98.323%
57.0	12.502	1.154	2239.399	.044%	98.374%
58.0	12.319	1.148	2240.547	.044%	98.424%
59.0	12.129	1.143	2241.69	.044%	98.474%
60.0	11.946	1.137	2242.827	.044%	98.524%
61.0	11.791	1.133	2243.96	.043%	98.574%
62.0	11.672	1.131	2245.09	.043%	98.624%
63.0	11.531	1.128	2246.219	.043%	98.673%
64.0	11.412	1.126	2247.345	.043%	98.723%
65.0	11.306	1.124	2248.469	.043%	98.772%
66.0	11.201	1.123	2249.592	.043%	98.821%
67.0	11.102	1.121	2250.713	.043%	98.871%
68.0	11.018	1.121	2251.834	.043%	98.920%
69.0	10.913	1.119	2252.953	.043%	98.969%
70.0	10.842	1.117	2254.07	.043%	99.018%
71.0	10.779	1.117	2255.188	.043%	99.067%
72.0	10.702	1.117	2256.304	.043%	99.116%
73.0	10.652	1.117	2257.421	.043%	99.165%
74.0	10.610	1.118	2258.539	.043%	99.214%
75.0	10.540	1.117	2259.656	.043%	99.263%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	10.498	1.117	2260.773	.043%	99.312%
77.0	10.463	1.118	2261.891	.043%	99.362%
78.0	10.427	1.118	2263.009	.043%	99.411%
79.0	10.385	1.118	2264.127	.043%	99.460%
80.0	10.357	1.118	2265.245	.043%	99.509%
81.0	10.329	1.119	2266.364	.043%	99.558%
82.0	10.308	1.119	2267.483	.043%	99.607%
83.0	10.294	1.120	2268.603	.043%	99.656%
84.0	10.259	1.120	2269.723	.043%	99.706%
85.0	10.245	1.119	2270.842	.043%	99.755%
86.0	10.216	1.118	2271.96	.043%	99.804%
87.0	10.188	1.117	2273.077	.043%	99.853%
88.0	10.174	1.115	2274.192	.043%	99.902%
89.0	10.181	1.116	2275.308	.043%	99.951%
90.0	10.174	1.116	2276.424	.043%	100.000%

Zonal flux distribution table

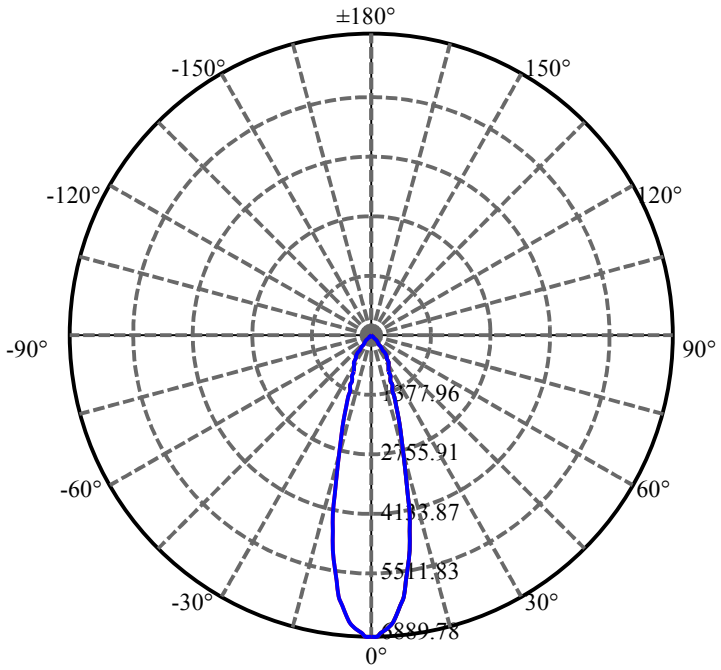
ZONAL LUMEN SUMMARY

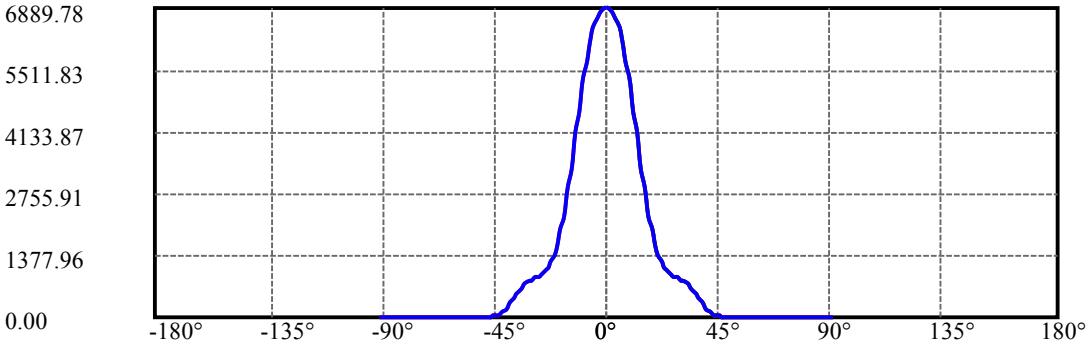
Zone	Lumens	%Lamp	%Fixt
0-30	1854.91	71.12%	81.48%
0-40	2194.33	84.14%	96.39%
0-60	2242.83	86.00%	98.52%
0-90	2275.31	87.24%	99.95%
0-120	2275.31	87.24%	99.95%
0-180	2276.42	87.29%	100.00%
60-90	33.62	1.29%	1.48%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-29.26	1821.14	69.83%	80.00%

ZONAL LUMEN SUMMARY

0-10	568.79
10-20	806.59
20-30	479.53
30-40	339.42
40-50	36.81
50-60	11.69
60-70	11.24
70-80	11.18
80-90	10.06
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

Light Distribution Curve [Unit:cd]





C0(Max):

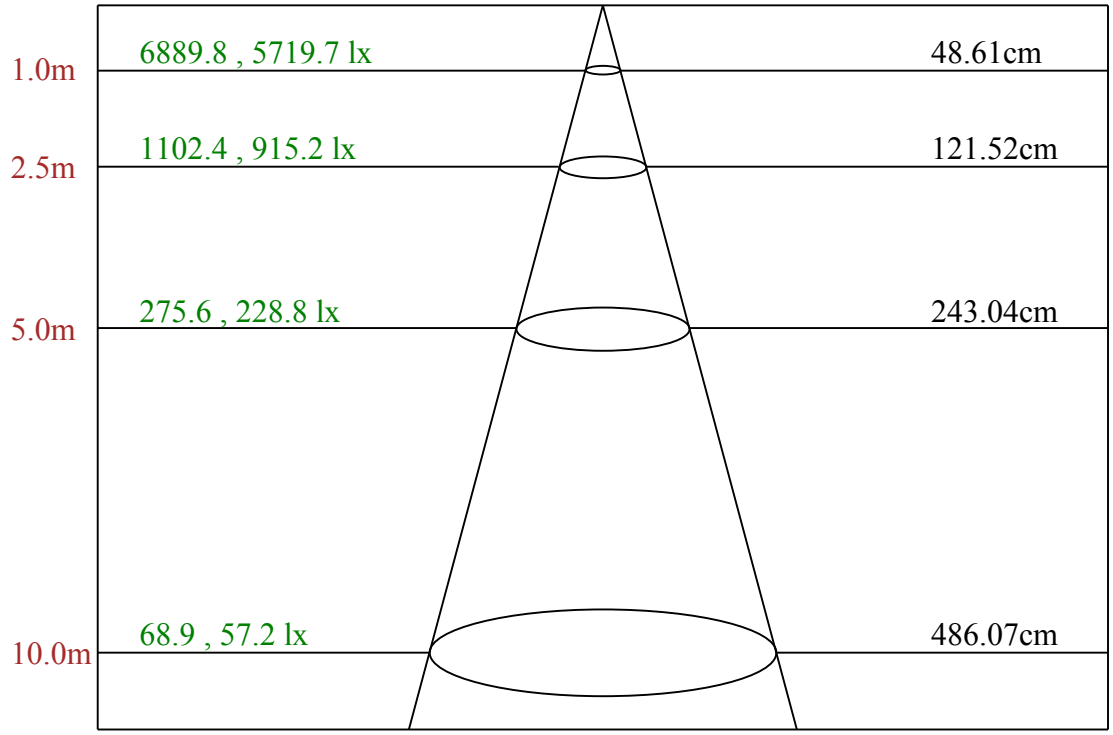
C0/C180:

C90/C270:

Field angle(10%Imax):C0/180Left:33.4 Right:33.4
:C90/270Left:33.4 Right:33.4

Beam Angle(50%Imax):C0/180Left:13.6 Right:13.6
:C90/270Left:13.6 Right:13.6

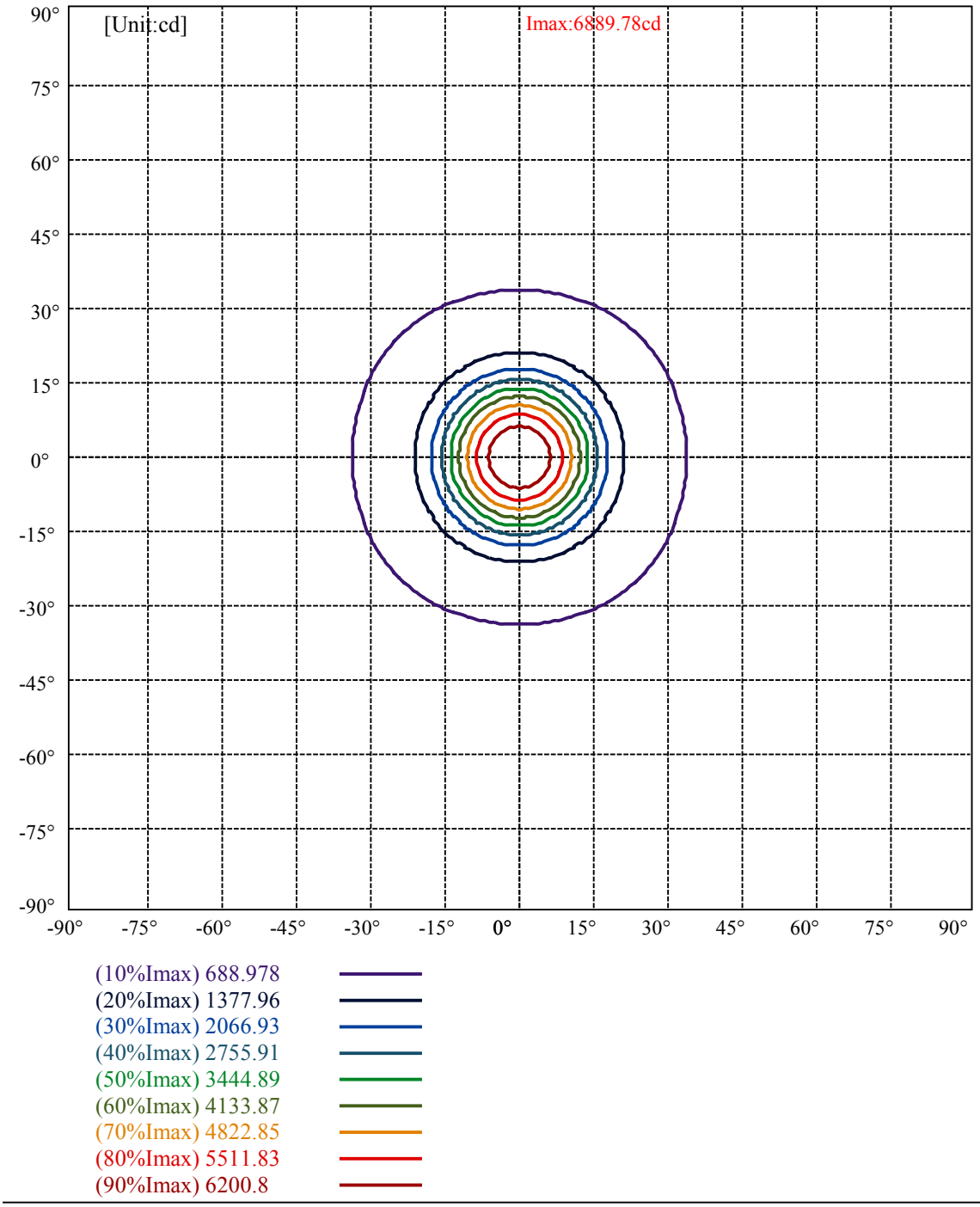
Lux distance Curve



Max , Ave

Beam angle of C0 plane 27.32

ISO-Intensity(V-H)

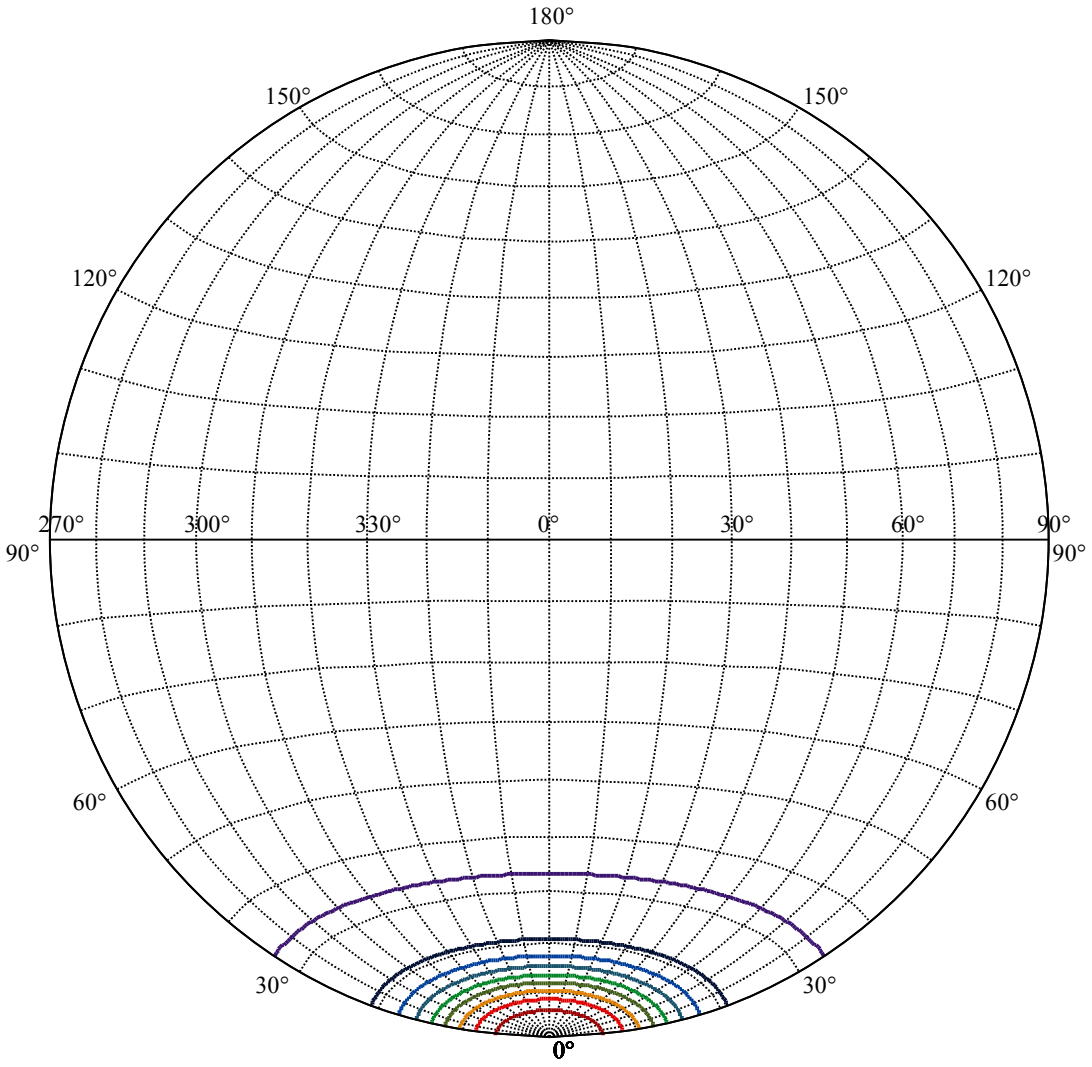


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/12/30
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

ISO candela diagram on circular web

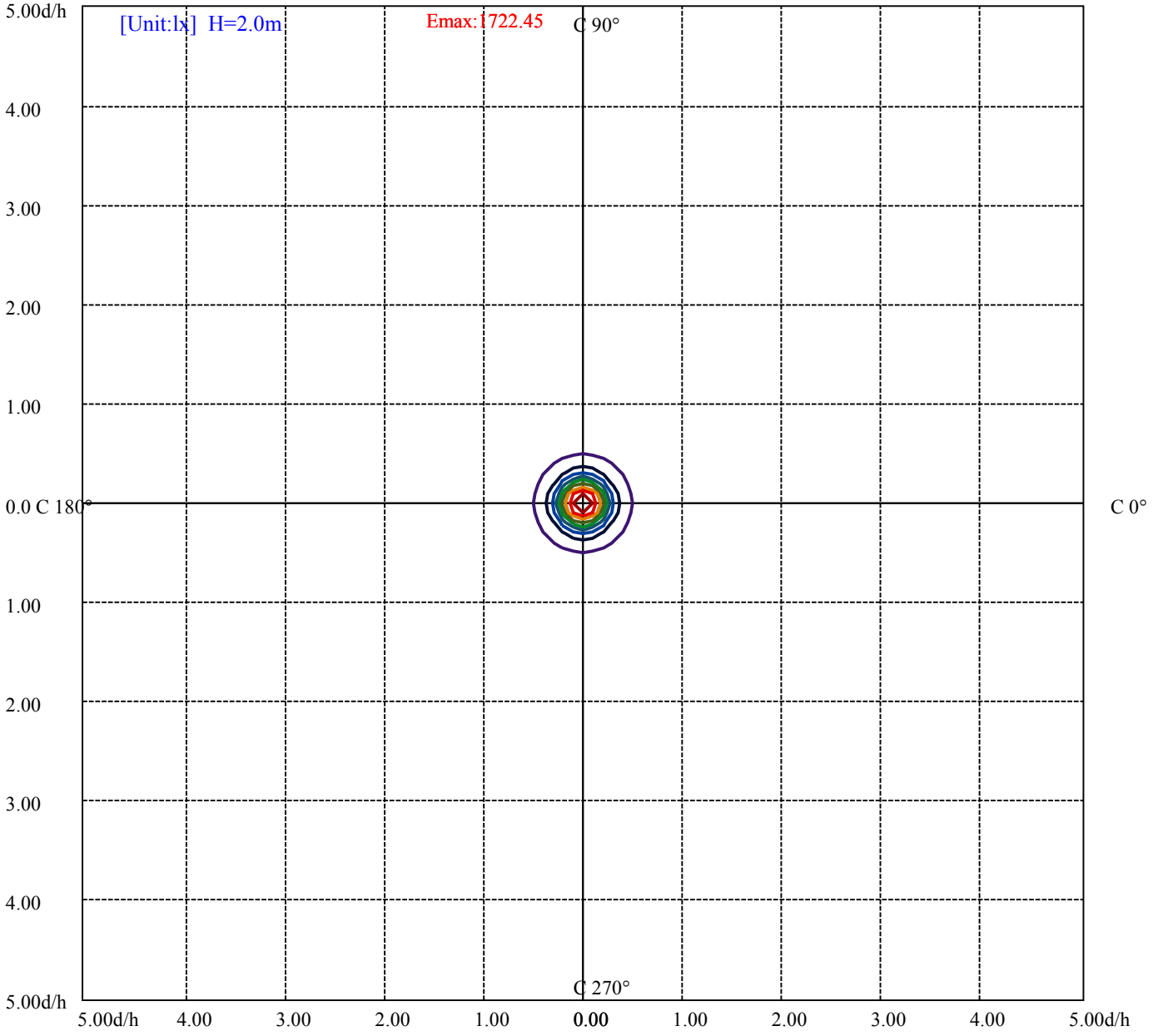


House [Unit:cd] Road

Imax:6889.78

(10%Imax) 688.978
(20%Imax) 1377.96
(30%Imax) 2066.93
(40%Imax) 2755.91
(50%Imax) 3444.89
(60%Imax) 4133.87
(70%Imax) 4822.85
(80%Imax) 5511.83
(90%Imax) 6200.8

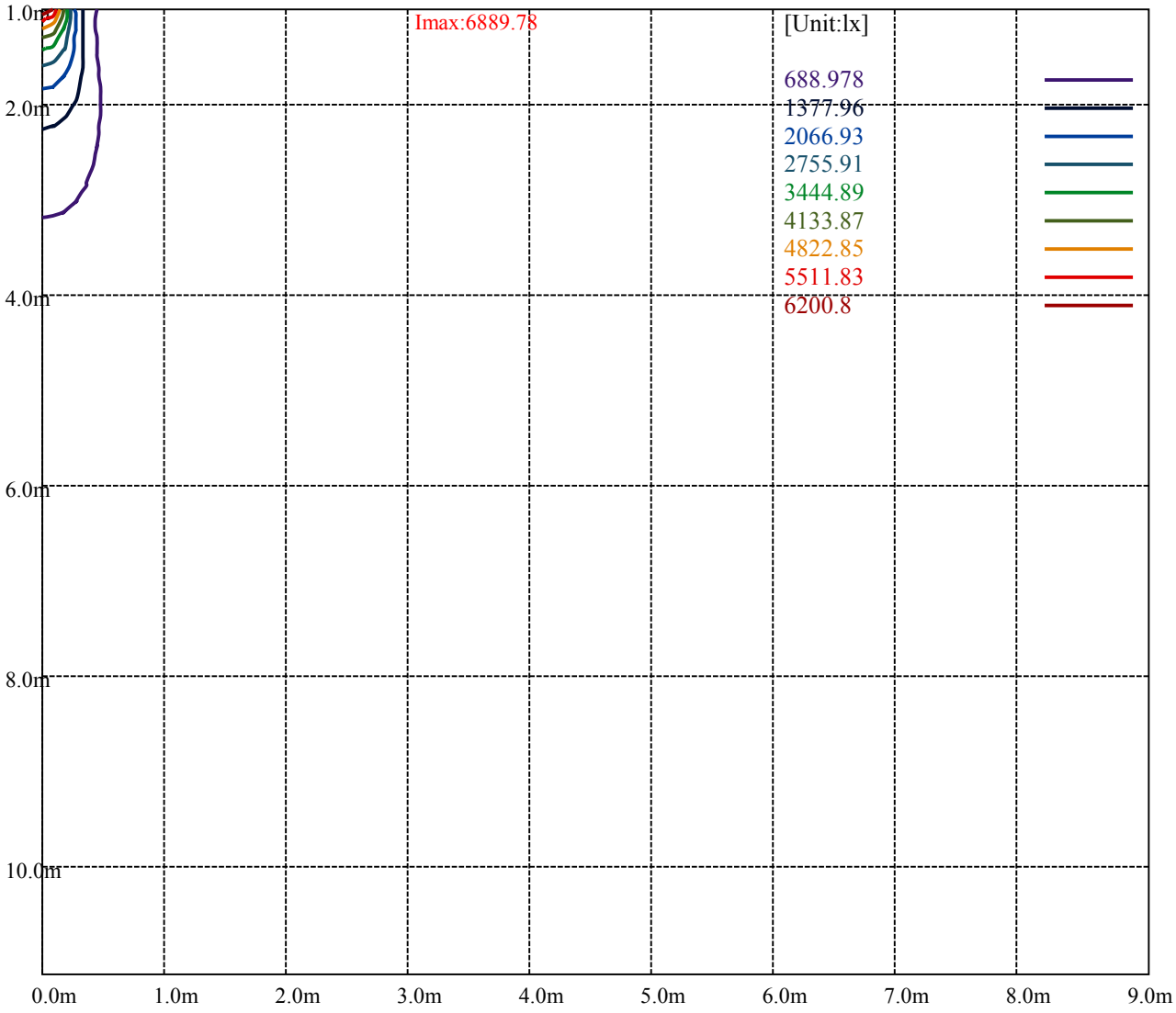
ISO illuminance diagram



(10%Emax) 172.2445
(20%Emax) 344.49
(30%Emax) 516.7325
(40%Emax) 688.9775
(50%Emax) 861.2225
(60%Emax) 1033.468
(70%Emax) 1205.713
(80%Emax) 1377.955
(90%Emax) 1550.2

Equipment: GMS1980
Temperature(°C): 25.0
Date: 2019/12/30
Humidity(%): 65.0%
Operator: NT07
Distance(m): 7.50

Space ISO Lux diagram



Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/12/30
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Luminance Limitting Curve(no luminous side)

Luminance Table

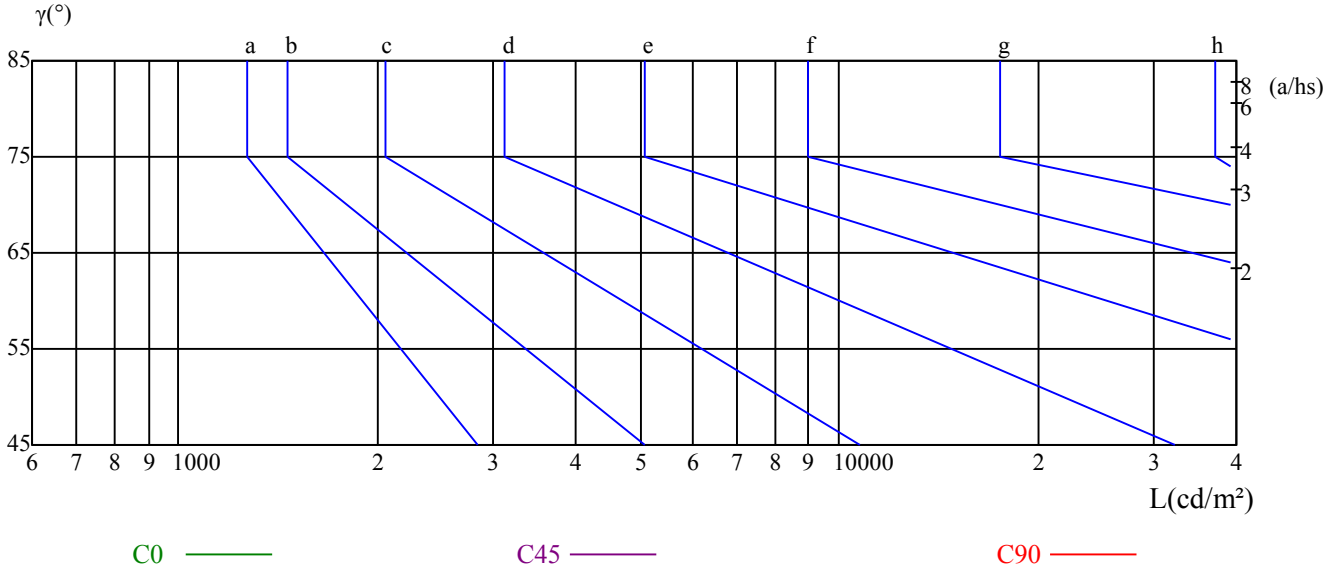
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

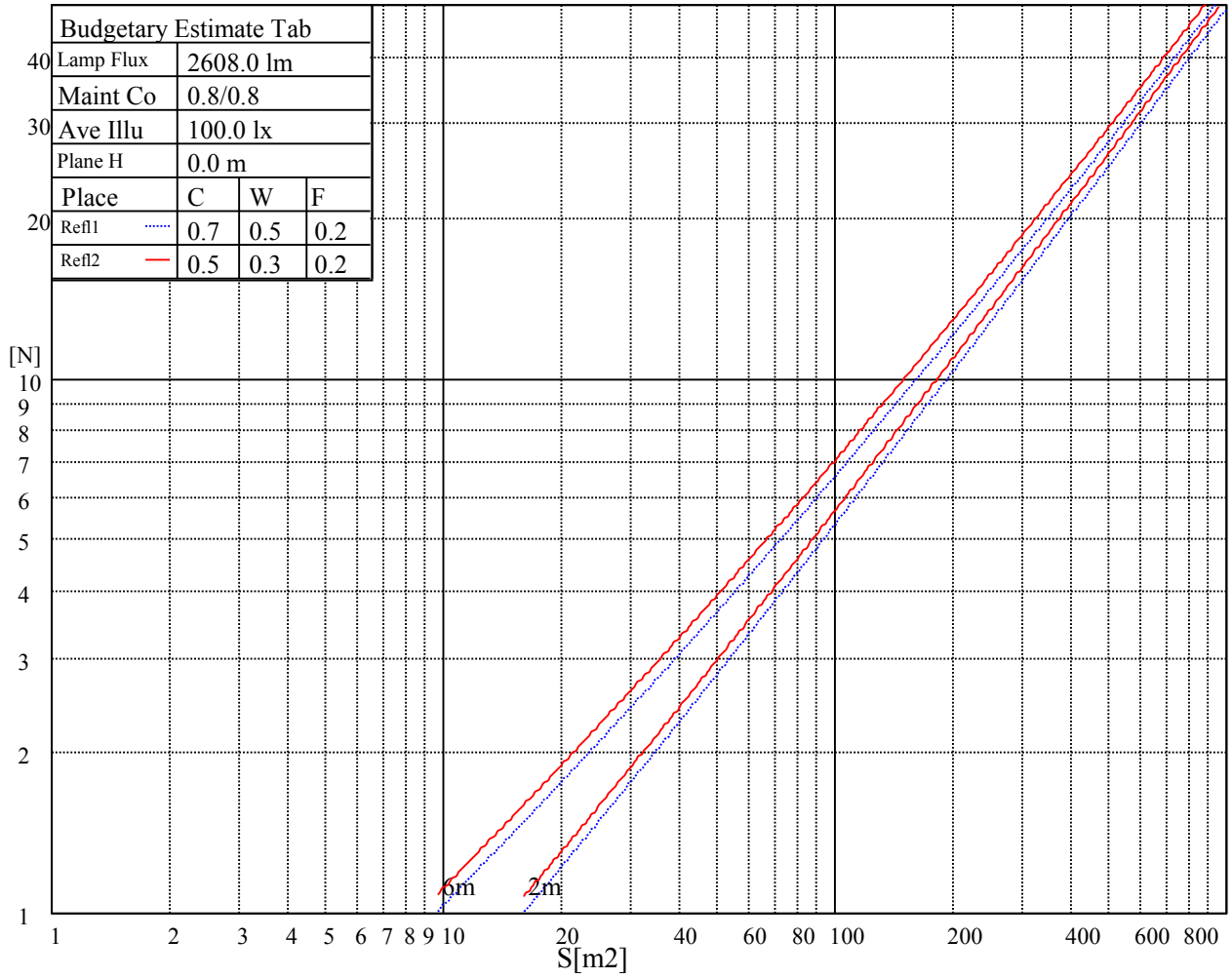
Glare Table

Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

Luminance Limitting Curve



Budgetary Estimate Table

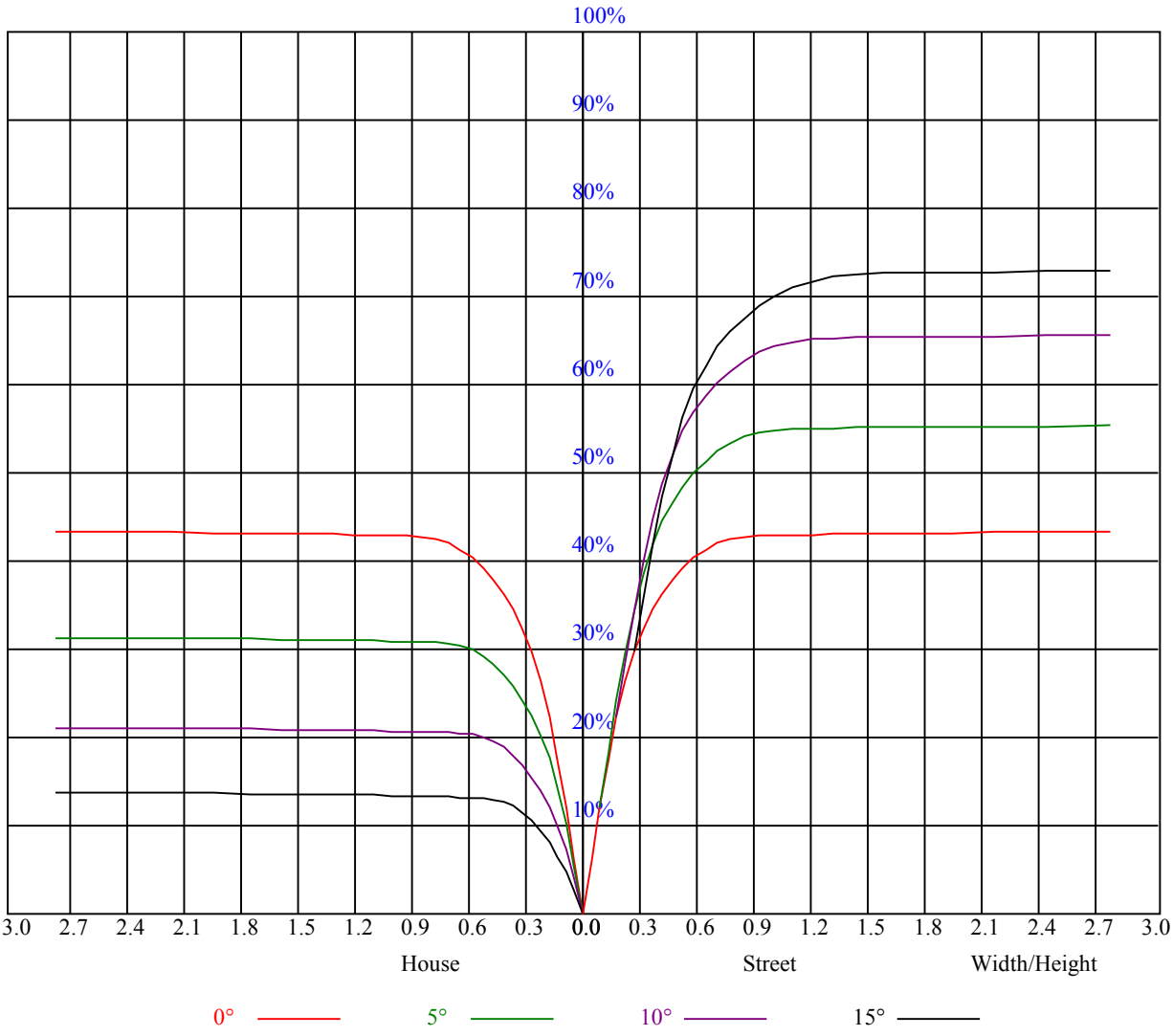


Equipment: GMS1980 Date: 2019/12/30 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

Utilization factor table for indoor luminaire

RHOCC	80			70			50			30			10			0
RHOW	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR	COEFFCIENTS OF UTILIZATION RHOFC=20 CU															
0	1.04	1.04	1.04	1.01	1.01	1.01	0.97	0.97	0.97	0.93	0.93	0.93	0.89	0.89	0.89	0.87
1	0.97	0.95	0.94	0.95	0.94	0.92	0.92	0.91	0.89	0.89	0.88	0.87	0.86	0.85	0.84	0.83
2	0.92	0.89	0.86	0.90	0.87	0.85	0.87	0.85	0.83	0.85	0.83	0.81	0.83	0.81	0.80	0.78
3	0.87	0.83	0.80	0.86	0.82	0.79	0.83	0.80	0.78	0.81	0.79	0.77	0.79	0.77	0.76	0.74
4	0.82	0.78	0.75	0.81	0.78	0.75	0.80	0.76	0.74	0.78	0.75	0.73	0.76	0.74	0.72	0.71
5	0.78	0.74	0.71	0.78	0.74	0.70	0.76	0.73	0.70	0.75	0.72	0.69	0.73	0.71	0.69	0.68
6	0.75	0.70	0.67	0.74	0.70	0.67	0.73	0.69	0.67	0.72	0.69	0.66	0.71	0.68	0.66	0.65
7	0.71	0.67	0.64	0.71	0.67	0.64	0.70	0.66	0.63	0.69	0.66	0.63	0.68	0.65	0.63	0.62
8	0.69	0.64	0.61	0.68	0.64	0.61	0.67	0.63	0.61	0.66	0.63	0.61	0.66	0.63	0.60	0.59
9	0.66	0.61	0.59	0.65	0.61	0.58	0.65	0.61	0.58	0.64	0.61	0.58	0.63	0.60	0.58	0.57
10	0.63	0.59	0.56	0.63	0.59	0.56	0.62	0.59	0.56	0.62	0.58	0.56	0.61	0.58	0.56	0.55

Coefficient Utilization Curve



Equipment: GMS1980	Date: 2019/12/30	Operator: NT07
Temperature(°C): 25.0	Humidity(%): 65.0%	Distance(m): 7.50

Intensity data(cd)

C/γ(°)	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0
0.0	6888.38	6932.81	6960.38	6948.00	6913.13	6824.81	6703.31	6578.44	6354.00
45.0	6864.19	6906.38	6919.31	6900.75	6854.06	6768.00	6643.13	6491.25	6279.75
90.0	6894.00	6886.69	6837.75	6768.56	6667.88	6515.44	6337.69	6087.38	5788.13
135.0	6912.56	6878.25	6794.44	6693.75	6559.31	6367.50	6127.31	5899.50	5529.38
180.0	6888.38	6810.75	6666.75	6512.06	6318.56	6054.75	5733.56	5401.69	4987.13
225.0	6864.19	6790.50	6666.75	6498.56	6308.44	6041.81	5725.69	5407.88	5007.38
270.0	6894.00	6874.31	6807.38	6717.94	6593.06	6381.00	6167.81	5916.94	5595.19
315.0	6912.56	6919.88	6895.69	6835.50	6750.00	6608.25	6420.94	6213.94	5933.81
360.0	6888.38	6932.81	6960.38	6948.00	6913.13	6824.81	6703.31	6578.44	6354.00

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	6101.44	5872.50	5500.13	5166.56	4752.00	4305.38	3896.44	3484.13	2995.88
45.0	6022.69	5752.13	5399.44	5052.94	4628.25	4172.06	3755.25	3347.44	2868.75
90.0	5486.06	5101.88	4680.00	4284.56	3876.19	3364.31	2975.06	2622.38	2309.06
135.0	5154.19	4780.13	4320.56	3902.06	3434.06	2990.25	2632.50	2320.31	1982.25
180.0	4587.19	4110.75	3682.69	3219.19	2791.69	2410.31	2118.94	1869.75	1635.75
225.0	4614.19	4139.44	3655.13	3233.25	2790.00	2403.56	2109.94	1856.25	1598.63
270.0	5225.06	4860.56	4416.19	4001.06	3523.50	3060.00	2684.25	2308.50	1993.50
315.0	5646.38	5276.81	4868.44	4478.63	4015.69	3603.38	3153.94	2778.19	2361.38
360.0	6101.44	5872.50	5500.13	5166.56	4752.00	4305.38	3896.44	3484.13	2995.88

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	2645.44	2337.19	2005.88	1779.75	1589.63	1413.56	1268.44	1165.50	1074.38
45.0	2498.63	2211.75	1898.44	1683.56	1495.13	1334.25	1208.25	1121.06	1041.19
90.0	1972.69	1747.13	1539.00	1371.38	1250.44	1117.18	1063.74	999.90	956.76
135.0	1747.13	1558.13	1366.88	1237.50	1140.19	1056.38	991.13	948.94	911.25
180.0	1441.69	1303.88	1108.91	1078.93	1015.43	965.19	919.24	890.27	866.87
225.0	1433.25	1300.50	1119.83	1081.01	1016.21	967.28	921.60	893.31	870.47
270.0	1760.63	1568.81	1374.19	1248.19	1147.50	1051.31	993.94	950.06	911.81
315.0	2079.00	1837.69	1633.50	1423.69	1286.44	1116.28	1068.53	1006.20	959.63
360.0	2645.44	2337.19	2005.88	1779.75	1589.63	1413.56	1268.44	1165.50	1074.38

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	1013.06	961.31	922.50	895.50	870.75	847.69	829.69	810.56	756.00
45.0	988.88	943.31	907.31	882.00	858.38	837.00	819.00	797.63	738.56
90.0	918.73	891.73	866.48	844.82	826.14	805.44	756.23	698.06	631.01
135.0	885.38	861.19	839.81	821.81	794.81	740.81	677.81	605.25	509.06
180.0	843.92	822.26	804.99	767.36	714.49	638.44	555.24	477.00	390.32
225.0	847.74	826.48	809.16	779.74	729.39	659.93	577.74	500.29	412.03
270.0	881.44	860.63	839.81	822.38	804.38	760.50	704.81	630.00	546.19
315.0	919.07	887.85	866.08	843.86	826.03	807.64	766.13	709.31	631.69
360.0	1013.06	961.31	922.50	895.50	870.75	847.69	829.69	810.56	756.00

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	693.56	621.00	532.69	443.25	364.50	286.88	191.48	126.90	68.79
45.0	678.38	609.75	525.38	439.31	361.13	293.06	186.53	122.34	64.35
90.0	538.31	462.60	382.67	286.82	212.57	143.83	78.75	34.88	23.91
135.0	432.56	354.94	286.31	182.36	117.68	58.89	28.01	23.01	20.36
180.0	304.37	230.96	161.94	88.65	46.35	28.01	24.64	21.15	18.84
225.0	325.74	251.21	180.17	103.61	56.93	30.66	25.31	21.38	18.28
270.0	467.44	389.25	289.69	243.00	145.13	81.96	37.52	25.82	23.18
315.0	545.74	467.33	389.08	291.21	217.46	149.46	84.15	39.38	26.78
360.0	693.56	621.00	532.69	443.25	364.50	286.88	191.48	126.90	68.79

Intensity data(cd)

C/γ(°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0
0.0	36.79	28.41	24.30	20.81	18.45	16.31	15.81	15.41	14.91
45.0	33.13	25.82	22.05	18.96	17.21	15.53	14.85	14.51	14.12
90.0	21.32	18.90	16.93	15.47	14.68	14.29	13.95	13.61	13.33
135.0	18.06	16.76	15.24	14.79	14.46	14.06	13.78	13.50	13.16
180.0	17.38	15.92	15.47	15.02	14.68	14.34	13.95	13.67	13.44
225.0	16.31	14.96	14.57	14.12	13.84	13.56	13.22	12.99	12.71
270.0	19.41	16.88	15.36	14.51	14.12	13.78	13.50	13.22	12.94
315.0	23.63	20.31	17.66	15.98	14.85	14.46	14.06	13.73	13.44
360.0	36.79	28.41	24.30	20.81	18.45	16.31	15.81	15.41	14.91

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	14.57	14.23	13.89	13.56	13.28	13.05	12.77	12.54	12.38
45.0	13.78	13.50	13.28	12.94	12.71	12.49	12.26	12.09	11.98
90.0	13.05	12.83	12.54	12.38	12.21	12.04	11.81	11.70	11.53
135.0	12.94	12.66	12.49	12.32	12.09	11.93	11.81	11.64	11.53
180.0	13.11	12.88	12.66	12.43	12.32	12.09	11.93	11.76	11.64
225.0	12.49	12.26	12.09	11.93	11.81	11.64	11.53	11.42	11.31
270.0	12.66	12.49	12.26	12.09	11.93	11.76	11.59	11.48	11.42
315.0	13.16	12.88	12.66	12.38	12.21	12.04	11.87	11.70	11.59
360.0	14.57	14.23	13.89	13.56	13.28	13.05	12.77	12.54	12.38

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	12.21	11.98	11.87	11.76	11.59	11.48	11.36	11.25	11.14
45.0	11.81	11.64	11.53	11.42	11.31	11.19	11.08	11.03	10.97
90.0	11.42	11.36	11.19	11.08	11.03	10.97	10.86	10.80	10.74
135.0	11.42	11.31	11.19	11.08	11.03	10.91	10.80	10.74	10.69
180.0	11.48	11.42	11.31	11.19	11.08	11.03	10.91	10.80	10.74
225.0	11.19	11.08	11.03	10.91	10.86	10.80	10.69	10.63	10.58
270.0	11.25	11.14	11.08	11.03	10.91	10.80	10.74	10.69	10.63
315.0	11.48	11.36	11.25	11.14	11.03	10.97	10.86	10.80	10.74
360.0	12.21	11.98	11.87	11.76	11.59	11.48	11.36	11.25	11.14

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	11.03	10.97	10.91	10.80	10.74	10.69	10.63	10.58	10.52
45.0	10.86	10.80	10.74	10.63	10.58	10.58	10.52	10.46	10.46
90.0	10.63	10.63	10.58	10.52	10.46	10.41	10.41	10.35	10.35
135.0	10.63	10.58	10.58	10.46	10.46	10.41	10.35	10.35	10.29
180.0	10.69	10.63	10.58	10.52	10.52	10.46	10.41	10.35	10.35
225.0	10.58	10.46	10.46	10.41	10.35	10.35	10.35	10.29	10.29
270.0	10.58	10.52	10.46	10.46	10.41	10.41	10.35	10.35	10.29
315.0	10.63	10.63	10.58	10.52	10.46	10.41	10.41	10.35	10.29
360.0	11.03	10.97	10.91	10.80	10.74	10.69	10.63	10.58	10.52

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	10.46	10.46	10.41	10.41	10.35	10.35	10.35	10.29	10.24
45.0	10.35	10.35	10.35	10.29	10.24	10.29	10.18	10.18	10.18
90.0	10.35	10.29	10.24	10.24	10.24	10.18	10.13	10.13	10.13
135.0	10.24	10.24	10.24	10.18	10.24	10.18	10.18	10.18	10.18
180.0	10.35	10.29	10.29	10.24	10.24	10.24	10.18	10.18	10.24
225.0	10.29	10.24	10.24	10.18	10.18	10.18	10.18	10.13	10.18
270.0	10.29	10.29	10.29	10.29	10.24	10.13	10.13	10.13	10.13
315.0	10.29	10.29	10.29	10.24	10.24	10.18	10.18	10.18	10.18
360.0	10.46	10.46	10.41	10.41	10.35	10.35	10.35	10.29	10.24

Intensity data(cd)

C/γ(°)	90.0
0.0	10.24
45.0	10.18
90.0	10.13
135.0	10.18
180.0	10.24
225.0	10.18
270.0	10.13
315.0	10.13
360.0	10.24